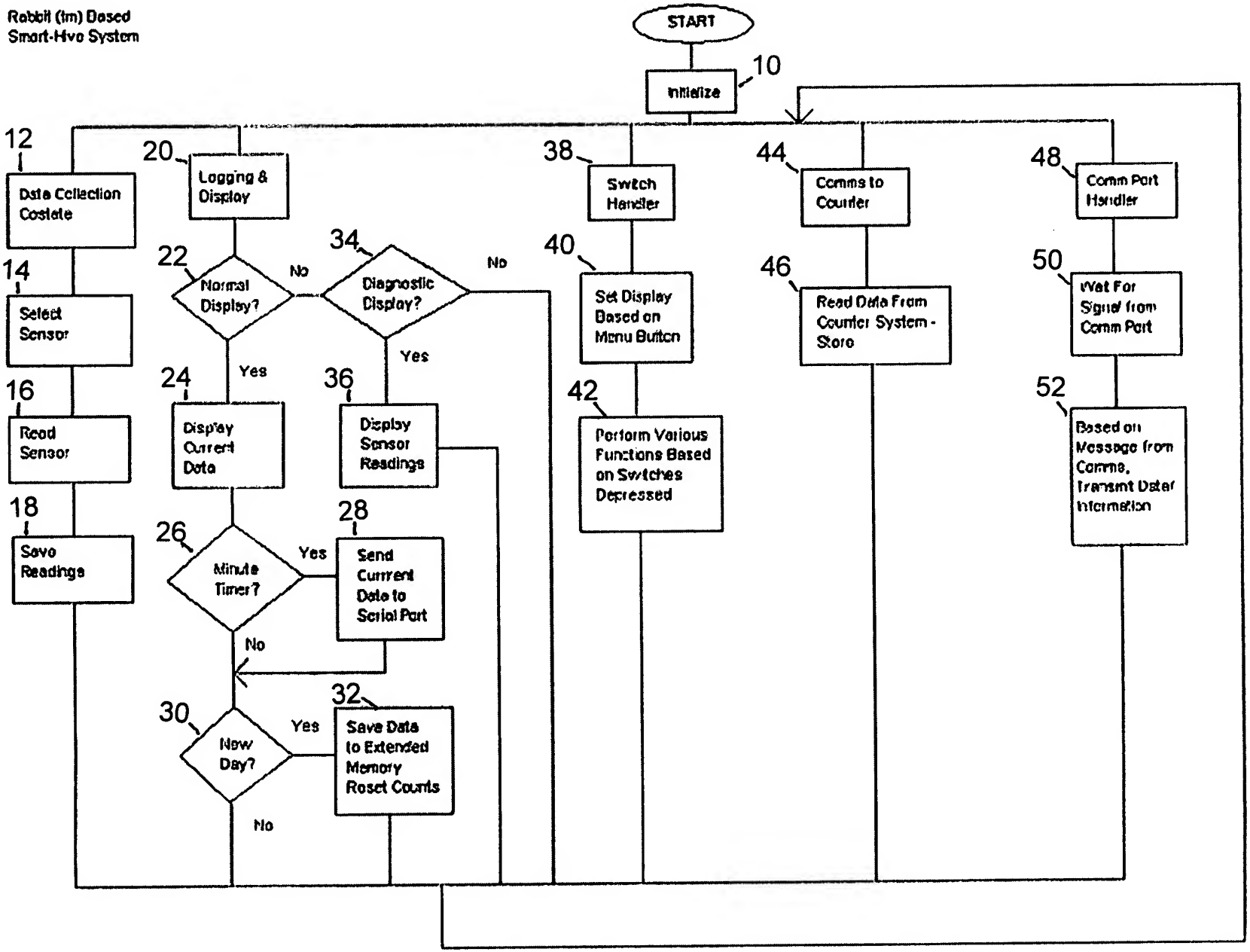
Rabbit (tm) Based
Smart-Hvo System
START
Initialize
10
12
Data Collection
Costate
14
Select
Sensor
16
Read
Sensor
18
Save
Readings
20
Logging &
Display
22
Normal
Display?
No
24
Yes
Display
Current
Data
26
Minute
Timer?
Yes
No
28
Send
Current
Data to
Serial Port
30
New
Day?
Yes
No
32
Save Data
to Extended
Memory
Reset Counts
34
Diagnostic
Display?
No
Yes
36
Display
Sensor
Readings
38
Switch
Handler
40
Set Display
Based on
Menu Button
42
Perform Various
Functions Based
on Switches
Depressed
44
Comms to
Counter
46
Read Data From
Counter System -
Store
48
Comm Port
Handler
50
Wait For
Signal from
Comm Port
52
Based on
Message from
Comms,
Transmit Data
Information

FIG. 1

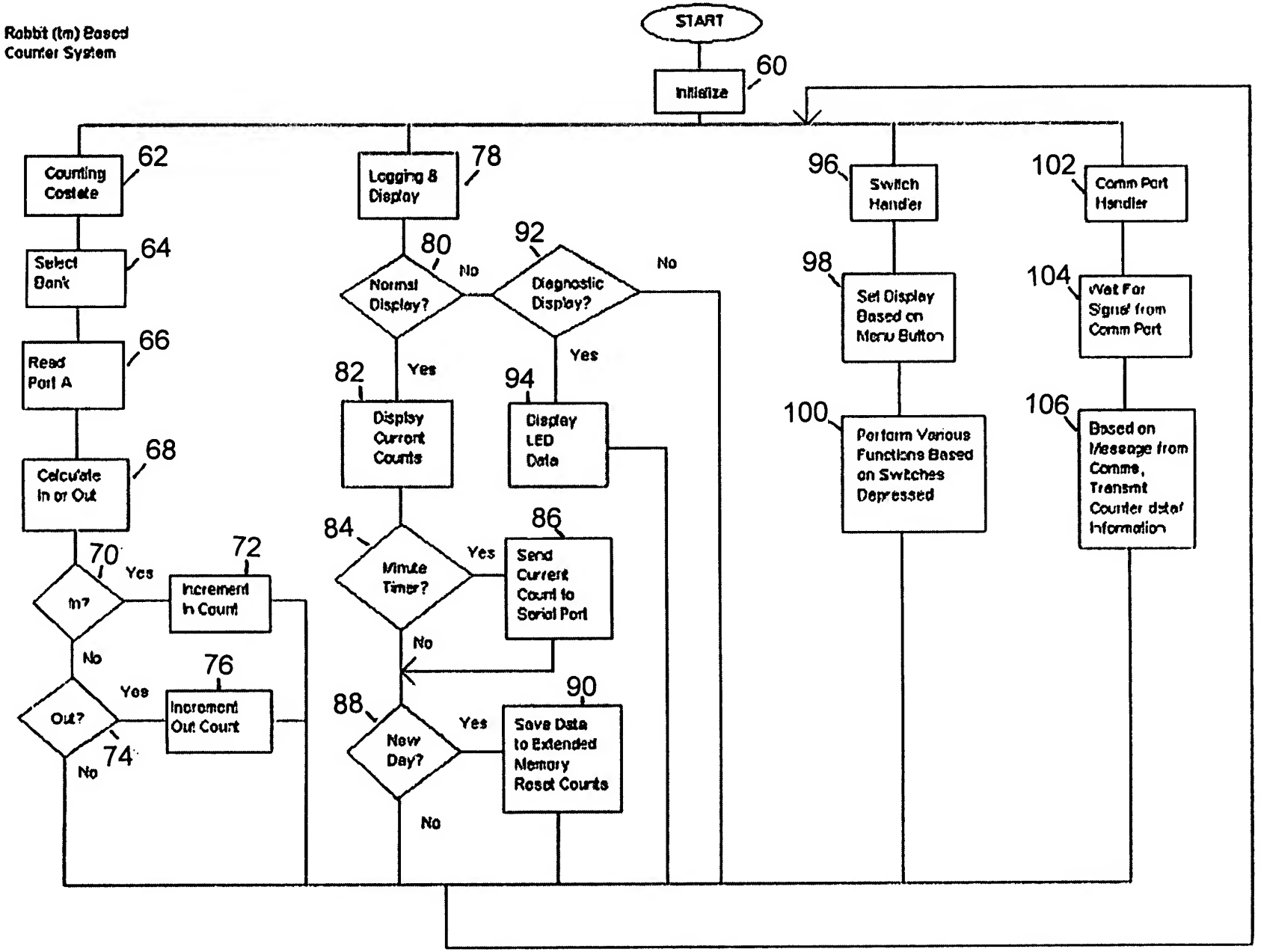
Rabbit (tm) Based Counter System
START
Initialize
60
Counting Costate
62
Select Bank
64
Read Port A
66
Calculate In or Out
68
In?
70
Yes
No
Increment In Count
72
Out?
74
Yes
No
Increment Out Count
76
Logging & Display
78
Normal Display?
80
No
Yes
Diagnostic Display?
92
No
Yes
Display Current Counts
82
Display LED Data
94
Minute Timer?
84
Yes
No
Send Current Count to Serial Port
86
New Day?
88
Yes
No
Save Data to Extended Memory Reset Counts
90
Switch Handler
96
Set Display Based on Menu Button
98
Perform Various Functions Based on Switches Depressed
100
Comm Port Handler
102
Wait For Signal from Comm Port
104
Based on Message from Comm, Transmit Counter data/ Information
106

FIG. 2

```
Write to out port to select counter bank
WrPortI (PBDR, &PBDRShadow, bank<<6) ;

count = RdPortI (PADR) ;

for (i=0; i<4; i++) {
   j = bank*4 + i ;
   temp = (count>> (2*i)) & 0x03; // get this channel's bits
    if ((channel [j] & 0x03) != temp)
       {
       if (((channel [j] & 0x03) == 0x00) && ((temp<<2) == (channel [j] & 0x0C))) // bulking bee
           // pop the stack
           channel [j] = (channel [j] >> 2) | 0xC0;
       else
        {
        // analysis
       if ((temp == 0x03) && (channel [j] == 0xD2)) {in++; timeins [period] ++;} // we got an in!
       if ((temp == 0x03) && (channel [j] == 0xE1)) {out++; timeouts [period] ++;} // we got an out!
       // push new value onto "stack"
       channel [j] = ((channel [j] & 0x3F) << 2) | temp;
    less rigerous method, for fast bees and slow detectors
       if (channel [j] == 0xD3) {in++; timeins [period] ++;}
       if (channel [j] == 0xE3) {out++; timeouts [period]++;}
       }
       }
   } // end for i loop
} // end bank loop
looper++;      // cycle counter
} // end costate
```

FIG. 3